



LESSONS LEARNED: COMBINING SPACEFLIGHT TRAINING AND MISSION CONTROL

Flight Control Operations
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Outline

- Background
 - Previous organization of training and flight operations
- Overview
 - Brief description of the re-organization
- Impacts of re-organization
- Lessons Learned
- Conclusion



Background

- ⦿ Previous organization
 - Division for spaceflight training
 - Division for flight operations
- ⦿ Merger combined two divisions into one
 - Expedition Vehicle Division
- ⦿ Resulted from in depth study of other training programs
 - Learn by doing before teaching
- ⦿ Two major changes simultaneously
 - Combine training and flight control
 - Decrease number of technical disciplines
 - Operator-Specialist-Instructor

Reorganization: Administrative

- ◉ Staggered merger
 - Not all groups were mandated to converge simultaneously
- ◉ Senior instructors and flight controllers involved in management decisions
- ◉ Groups merged step-by-step
 - Combine physically
 - Operate as two distinct groups initially
 - Eventually work together when creating simulation plans, for example



Reorganization: Technical

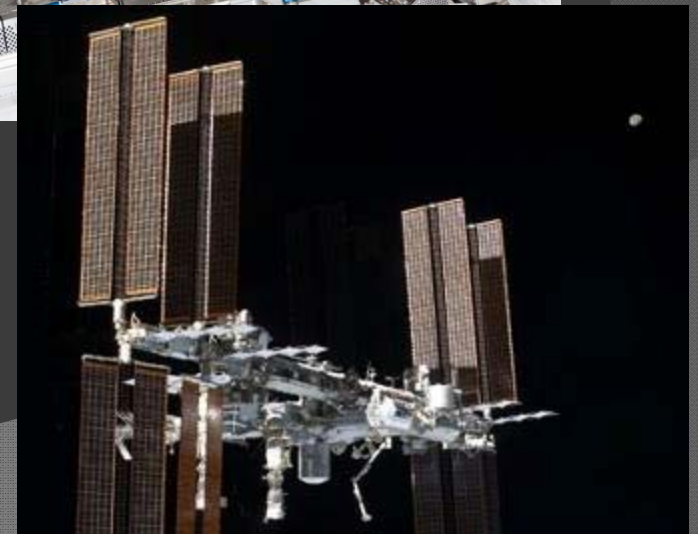
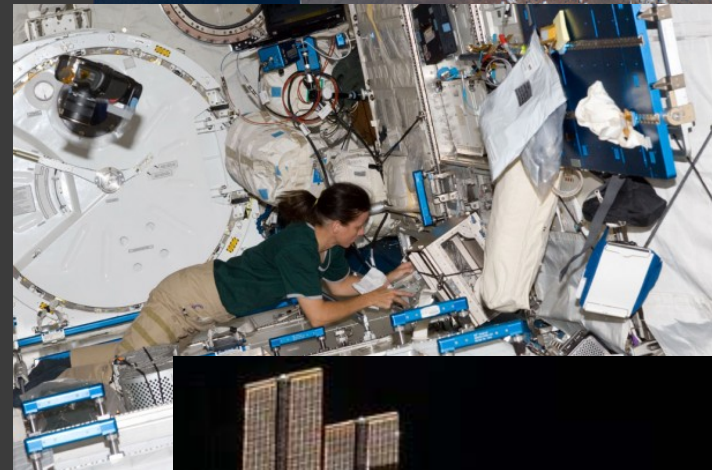
- ⦿ Senior members create cross training flow
 - Existing instructors and flight controllers
 - Operator training
 - Mini-sims
 - Specialist and Instructor flow
- ⦿ Staggered cross training
 - Management assigned personnel to enter appropriate cross training flow
 - Balance merger with existing duties
 - Mission Control, current crew training, office tasks, etc

Reorganization: Today

- ⦿ Merger continues today with marked success in cross training
 - CRONUS group name and patch to reflect new group (formerly C&T/CATO and CDH/ODIN)
 - 8 instructors cross trained in last year
 - 4 flight controllers cross trained
- ⦿ Significant milestones reached most recently, in the last year

Impacts

- Existing Employees
 - Training flow for flight controllers to instructors
 - Training flow for instructor to flight controller
 - Development parallel to maintaining current operations
 - Real time mission control support
 - Current crew training for existing missions
- New Employees
 - Training flow for Operator, Specialist, and Instructor
 - Created by existing employees in tandem with above duties



Lessons Learned

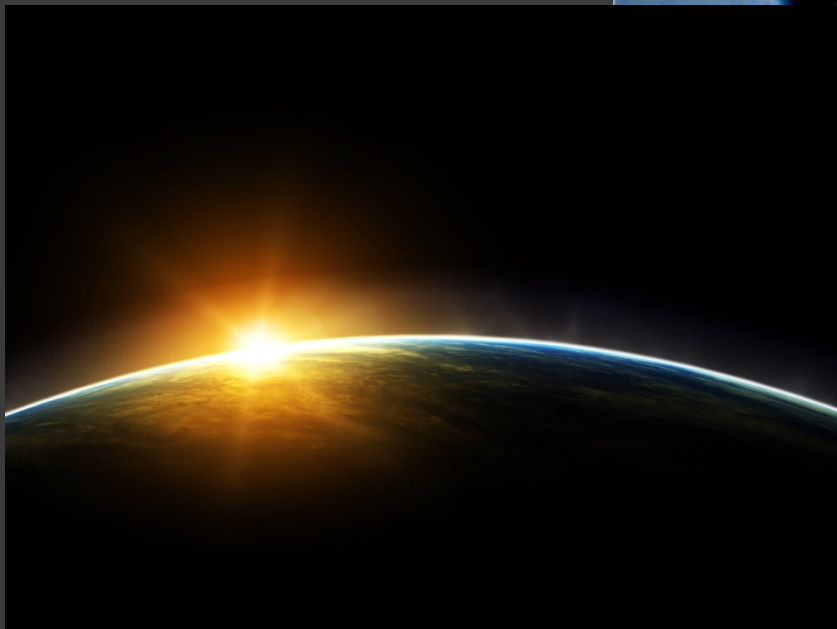
- ⦿ Staggered Merger
 - Workload still intense across new division
 - Lesson Learned: Better employee preparation
- ⦿ Resistance to Change
 - Some employees resisted cross training
 - Most were able to adjust and enjoyed new experience
 - Lesson Learned: Human nature is to resist change but the majority will support a good change
- ⦿ Simultaneous changes
 - ⦿ Combining training and flight control
 - ⦿ Decreasing number of technical disciplines
 - ⦿ Lesson Learned: Integrate changes serially
- ⦿ Mission Benefit
 - Cross trained instructors: Train crew and work real time for same mission
 - Lesson learned: Theory behind merger works in action
 - Experience in real time mission control makes a better instructor
 - Experience in teaching makes a better flight controller

Conclusion

- Merger required intense collaboration
- Employee resistance expected but largely overcome
 - Senior and high profile employees key in positive atmosphere
- Staggered merger key in success
- Patience and time keys in success
 - Merger still ongoing



Q&A



- The presentation content does not necessarily reflect the opinion of the entire Expedition Vehicle Division, the Mission Operations Directorate, the National Aeronautics and Space Administration, or the United States Government. Every effort has been made to ensure the accuracy of the information provided herein.